(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



. | 1841 | 1841 | 1842 | 1844 | 1844 | 1844 | 1844 | 1844 | 1844 | 1844 | 1844 | 1844 | 1844 | 1844 | 1844 | 1

(43) International Publication Date 15 April 2004 (15.04.2004)

PCT

(10) International Publication Number WO 2004/032573 A1

(51) International Patent Classification⁷: H01L 51/40

H05B 33/10,

(21) International Application Number:

PCT/IB2003/004155

(22) International Filing Date:

18 September 2003 (18.09.2003)

7 October 2002 (07.10.2002)

(25) Filing Language:

(30) Priority Data:

02079149.7

English

(26) Publication Language:

English

(=o, 1 nonemion numbunge

- (71) Applicant (for all designated States except US): KONIN-KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): NELLISSEN, Antonius, J., M. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (74) Agent: DEGUELLE, Wilhelmus, H., G.; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,

MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

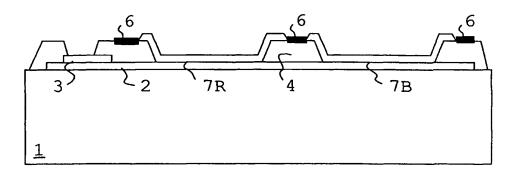
as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR MANUFACTURING A LIGHT EMITTING DISPLAY



(57) Abstract: The invention relates to a method for manufacturing a light emitting display comprising a plurality of light emitting elements on a substrate, wherein at least one delimiting means is provided on or over the substrate for at least partially bounding sites for deposition of a fluid light emitting substance to form the light emitting elements. At least a part of at least one of the delimiting means is repellent to the fluid light emitting substance. The repellent part may comprise a hydrophobic flow barrier. The method has the advantage of an enhanced resolution of light emitting elements, especially if the fluid light emitting substance is deposited by means of inkjet printing and involves different materials for generating different colours of light.

004/032573 41

	INTERNATIONAL SEARCH REPO	RT	lication No		
			PCT/IR 03	/04155	
A. CLASSI IPC 7	FICATION OF SUBJECT MATTER H05B33/10 H01L51/40				
According to	International Patent Classification (IPC) or to both national classifica	tion and IPC			
	SEARCHED			· · · · · · · · · · · · · · · · · · ·	
Minimum do IPC 7	cumentation searched (classification system followed by classification $H05B H01L$	on symbols)			
Documentat	ion searched other than minimum documentation to the extent that st	ch documents are incl	uded in the fields so	earched	
Electronic d	ata base consulted during the international search (name of data bas	e and, where practical	, search terms used)	
EPO-In	ternal, PAJ, WPI Data, COMPENDEX				
C. DOCUM	NTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the rele	evant passages		Relevant to claim No.	
P,X	JP 2003 243164 A (V TECHNOLOGY CO 29 August 2003 (2003-08-29) abstract	LTD)		1-3,5, 7-10	
X	EP 1 139 455 A (SEIKO EPSON CORP) 4 October 2001 (2001-10-04) column 2, line 33 -column 4, line column 5, line 10-19 example 1			1,3,5,6	
X	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 12, 12 December 2002 (2002-12-12) & JP 2002 237383 A (SEIKO EPSON C 23 August 2002 (2002-08-23) abstract	ORP), /		1	
	er documents are listed in the continuation of box C.	X Patent family	members are listed	in annex.	
'A' docume consid 'E' earlier of filing d 'L' docume which citation 'O' docume other n 'P' docume later th	nt defining the general state of the art which is not ered to be of particular relevance tocument but published on or after the International at a terms of the comment but published on or after the International at a terms of the comment of the c	 *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to invertion to cannot be considered to invertion cannot be considered to considered to considered to invention cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family 			
	actual completion of the international search	_	the International sea	arch report	
1:	2 January 2004	20/01/2	UO4		

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2

NL - 2280 HV Rijswijk

Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,

Fax: (+31-70) 340-3016 Form PCT/ISA/210 (second sheet) (July 1992)

Authorized officer

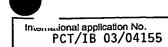
Doslik, N



Interr al Application No
PCT/IB 03/04155

C.(Continue	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	PC1/18 03/04155		
Category °	Citation of document, with Indication, where appropriate, of the relevant passages		Relevant to claim No.	
			<u> </u>	
X	WO 01 47045 A (PLASTIC LOGIC LTD;SIRRINGHAUS HENNING (GB); KAWASE TAKEO (GB); FR) 28 June 2001 (2001-06-28) the whole document		1-3,5-10	
		!		





INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This International Searching Authority found multiple inventions in this International application, as follows:
see additional sheet
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. X as all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-6

Method for manufacturing a light emitting display comprising a plurality of light emitting elements on a substrate, having at least one delimiting means, being repellent to the fluid light emitting substance.

2. Claims: 7-10

Light emitting display comprising a plurality of light emitting elements on a substrate, comprising light emitting materials in which some of the sites are partially bounded by a hydrophobic flow barrier.

nterni

PCT/IB 03/04155

Publication Patent family Publication Patent document cited in search report date member(s) date JP 2003243164 29-08-2003 NONE Α 04-10-2001 CN 1320011 A 31-10-2001 EP 1139455 Α 04-10-2001 EP 1139455 A2 JP 23-08-2002 2002237383 A TW 490997 B 11-06-2002 13-11-2003 US 2003211643 A1 2002016031 A1 07-02-2002 US 1320011 A 31-10-2001 JP 2002237383 Α 23-08-2002 CN EP 1139455 A2 04-10-2001 TW 490997 B 11-06-2002 US 2003211643 A1 13-11-2003 US 07-02-2002 2002016031 A1 WO 0147045 Α 28-06-2001 ΑU 2015901 A 03-07-2001 2016001 A 03-07-2001 ΑU AU 2206601 A 03-07-2001 03-07-2001 ΑU 2206901 A 07-01-2003 BR 0016643 A BR 0016660 A 25-02-2003 25-02-2003 BR 0016661 A BR 0016670 A 24-06-2003 CA 2394881 A1 28-06-2001 28-06-2001 CA 2394886 A1 CA 2394895 A1 28-06-2001 28-06-2001 2395004 A1 CA 1425201 T 18-06-2003 CN CN 1425202 T 18-06-2003 1425203 T 18-06-2003 CN 18-06-2003 CN 1425204 T EP 1243032 A2 25-09-2002 ΕP 25-09-2002 1243033 A1 ΕP 1243034 A1 25-09-2002 ΕP 25-09-2002 1243035 A2 WO 0147043 A1 28-06-2001 28-06-2001 WO 0146987 A2 WO 0147044 A2 28-06-2001 WO 0147045 A1 28-06-2001 JP 2003518332 T 03-06-2003 JP 2003518754 Ţ 10-06-2003 JP 10-06-2003 2003518755 T 10-06-2003 JP 2003518756 T US 27-03-2003 2003059984 A1 US 2003059987 A1 27-03-2003 US 2003059975 A1 27-03-2003 US 2003060038 A1 27-03-2003 TW 518760 B 21-01-2003

Interni

Intern: Application No PCT/IB 03/04155

InTormation on patent family members

Patent document clted in search report		Publication date	<i>;</i> .	Patent family member(s)		Publication date
JP 2003243164	A	29-08-2003	NONE			<u></u>
EP 1139455	A	04-10-2001	CN	1320011	Α	31-10-2001
			EP	1139455	A2	04-10-2001
			JP	2002237383	Α	23-08-2002
			TW	490997	В	11-06-2002
			US	2003211643	A1	13-11-2003
			US	2002016031	A1	07-02-2002
JP 2002237383	A	23-08-2002	CN	1320011	Α	31-10-2001
			EP	1139455		04-10-2001
			TW	490997		11-06-2002
			US	2003211643	A1	13-11-2003
			US 	2002016031	A1	07-02-2002
WO 0147045	Α	28-06-2001	AU	2015901		03-07-2001
			AU	2016001		03-07-2001
			AU	2206601		03-07-2001
			AU	2206901		03-07-2001
			BR	0016643		07-01-2003
			BR	0016660		25-02-2003
			BR	0016661		25-02-2003
			BR	0016670	Α	24-06-2003
			CA	2394881		28-06-2001
			CA	2394886	A1	28 -06- 2001
			CA	2394895	A1	28-06-2001
			CA	2395004	A1	28-06-2001
			CN	1425201	T	18-06-2003
			CN	1425202	T	18-06-2003
			CN	1425203	T	18-06-2003
			CN	1425204	T	18-06-2003
			EP	1243032	A2	25-09-2002
			EP	1243033		25-09-2002
			ΕP	1243034		25-09-2002
			EP	1243035		25-09-2002
			WO	0147043		28-06-2001
			WO	0146987		28-06-2001
			WO	0147044		28-06-2001
			WO	0147045		28-06-2001
			JP	2003518332		03-06-2003
			JР	2003518754		10-06-2003
			JP	2003518755	T	10-06-2003
			JP	2003518756	T	10-06-2003
			US	2003059984		27-03-2003
			US	2003059987		27-03-2003
			US	2003059975		27-03-2003
			ÜS	2003060038		27-03-2003
			TW	518760		21-01-2003